

**PANDARID COPEPODS PARASITIC ON SHARKS FROM NORTH QUEENSLAND WATERS.** *Memoirs of the Queensland Museum* 33(1): 290. 1993. The Pandaridae are ectoparasitic caligoid copepods exclusive to elasmobranchs. 38 species are known worldwide (Cressey, 1967, 1970; Rangnekar & Rangnekar, 1972; Cressey & Boyle, 1978; Cressey & Simpfendorfer, 1988).

In a checklist of fish parasites from Australian waters, Beumer et al. (1983) listed 8 pandarid species based on records in two published studies of Australian copepod parasites (Heegaard, 1962; Kabata, 1966). Beumer et al. (1983) followed Cressey (1967) in synonymising *Dinematura* Burmeister, 1833 with *Dinemoura* Latreille, 1829. However, they did not follow Cressey by regarding *Nesippus australis* Heegaard, 1962 and *N. incisus* Heegaard, 1962 as separate from *N. orientalis* Heller, 1868, or by regarding *Perissopus serratus* Heegaard, 1962 as separate from *P. dentatus* Steenstrup & Lütken, 1861. Beumer et al. (1983) thus contained 6 valid species: *Dinemoura latifolia* (Steenstrup & Lütken, 1861), *D. producta* (Müller, 1785), *Echthrogaleus coleopranus* (Güérin-Méneville, 1837), *Nesippus orientalis* Heller, 1868, *Pandarus bicolor* Leach, 1816, and *Perissopus dentatus* Steenstrup & Lütken, 1861. Cressey & Simpfendorfer (1988) added *Pseudopandarus australis* to the species known from Australian waters. This note reports the occurrence of 3 pandarid species on sharks from Cleveland Bay (19°15'S, 146°50'E), north Queensland, and provides information on their hosts. Sharks were caught between Feb. 1986 and Jan. 1988 using gillnets, longlines, otter trawls and handlines. The parasites were identified using keys in Yamaguti (1963) and Cressey (1967).

Three species were identified: *Pandarus niger* Kirtisinghe, 1950 (QMW12207, 12212); *Perissopus dentatus* Steenstrup & Lütken, 1861 (QMW12208, 12209, 12456, 12462, 12464); and *Pseudopandarus australis* Cressey & Simpfendorfer, 1988 (QMW12210, 12211). The occurrence of *P. niger* is a

Sharks	Specimens examined	<i>Pandarus niger</i>	<i>Perissopus dentatus</i>	<i>Pseudopandarus australis</i>
<i>Carcharhinus dussumieri</i>	16	-	100	12.5
<i>C. fitzroyensis</i>	30	-	50	-
<i>C. maculoti</i>	1	-	-	-
<i>C. sorrah</i>	28	21.4	21.4	-
<i>C. tilstoni</i>	45	-	91.4(2.2)	-
<i>Rhizoprionodon acutus</i>	47	-	-	61.7(2.1)
<i>R. taylori</i>	201	-	1.0	36.8(3.0)
<i>Hemigaleus microstoma</i>	4	-	75	25(25)
<i>Sphyrna lewini</i>	91	1.1	10.6	1.1
<i>S. mokarran</i>	1	-	100	-

Table 1. Rates of occurrence of pandarid copepods on sharks of Carcharhinidae(C), Hemigaleidae(H), and Sphyrnidae(S). Rates given are for females; where present, rate for males given in brackets.

new record for Australian waters. It has previously been reported from Sri Lanka (Kirtisinghe, 1950) and Taiwan (Cressey, 1967) on sharks from the family Carcharhinidae. It is widespread in tropical Australian waters, regularly occurring on *C. sorrah* in the Northern Territory (J. Lyle, pers. comm.; QMW12460, 12461).

*P. dentatus* is abundant and widespread in tropical and subtropical oceans, and previous workers have reported it from 29 species of shark (Yamaguti, 1963; Cressey, 1967, 1970; Hewitt, 1967; Russo, 1975; Beumer et al., 1983). Only one of the 8 host species of *P. dentatus* recorded for Cleveland Bay (*Sphyrna lewini*) has previously been reported (Hewitt, 1967).

Rates of occurrence were variable between both host and pandarid species, with female pandarids occurring more frequently, and on more host species, than males (Table 1). The three families of sharks on which the pandarids were recorded are all active, free swimming and closely related (Compagno, 1988). Two benthic shark species (*Chiloscyllium punctatum* and *Stegastoma fasciatum*) — from a different order — had no pandarids on them.

#### Literature cited

- Beumer, J.P., Ashburner, L.D., Burbury, M.E., Jette, E. & Latham, D.J. 1983. 'A checklist of the parasites of fishes from Australian and its adjacent Antarctic Territories. Technical Communications No. 48 of the Commonwealth Institute of Parasitology.' (Commonwealth Agricultural Bureaux: London)
- Compagno, L.J.V. 1988. 'Sharks of the Order Carcharhini-formes.' (Princeton University Press: Princeton).
- Cressey, R. 1967. Revision of the family Pandaridae (Copepoda: Caligoida). *Proc. U.S. Nat. Mus.* 121(3570): 1-333.
- Cressey, R.F. 1970. Copepods parasitic on sharks from the west coast of Florida. *Smithson. Contr. Zool.* 38: 1-30.
- Cressey, R. & Boyle, H. 1978. A new genus and species of parasitic copepod (Pandaridae) from a unique shark. *Pac. Sci.* 32: 25-30.
- Cressey, R. & Simpfendorfer, C. 1988. *Pseudopandarus australis* a new species of pandarid copepod from Australian waters. *Proc. Biol. Soc. Wash.* 101: 340-345.
- Heegaard, P. 1962. Parasitic copepoda from Australian waters. *Rec. Aust. Mus.* 25: 149-233.
- Hewitt, G.C. 1967. Some New Zealand parasitic copepoda of the Family Pandaridae. *N.Z. J. Mar. Freshw. Res.* 1: 180-264.
- Kabata, Z. 1966. Copepoda parasitic on Australian fishes. VI. Some caligoid species. *Ann. Mag. Nat. Hist.* 13: 563-570.
- Kirtisinghe, P. 1950. Parasitic copepods of fish from Ceylon III. *Parasitology* 40: 77-86.
- Rangnekar, P.G. & Rangnekar, M.P. 1972. Copepods parasitic on fishes of Bombay, Family Pandaridae - I. *J. Univ. Bombay* 61: 77-87.
- Russo, R.A. 1975. Notes on the external parasites of California inshore sharks. *Calif. Fish and Game* 61: 228-232.
- Yamaguti, S. 1963. 'Parasitic Copepoda and Branchiura of Fishes'. (Interscience: New York).

Colin A. Simpfendorfer, Department of Zoology, James Cook University of North Queensland, Queensland 4811, Australia, 10 October, 1992.